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News Release

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Comparative effectiveness of third-dose mRNA COVID vaccines

BOSTON – Third doses of both Moderna and Pfizer mRNA-based COVID-19 vaccines were effective in protecting against emerging variants, Moderna slightly more so, according to an article published Monday, Jan. 2, 2023, in *Nature Microbiology*.

“Our study demonstrates that third doses of both the Pfizer and Moderna vaccines were highly effective at preventing severe COVID-19 outcomes, such as hospitalizations, ICU admissions and deaths. While any differences in effectiveness were small on the absolute scale, and largely limited to less severe outcomes, they may be meaningful when considering the large population scale and vaccine deployment,” said study co-first author Dr. Hanna Gerlovin, a biostatistician at the Massachusetts Veterans Epidemiology Research and Information Center, located at VA Boston Healthcare System.

Using electronic health records of Veterans who received a third dose of either the Moderna and Pfizer vaccine, researchers from the VA Causal Inference Enterprise – known as VA-CAUSAL – Methods Core, studied two groups of 65,196 persons, each having received the Pfizer or Moderna COVID-19 vaccine as their third dose between Oct. 20, 2021, and Feb. 8, 2022, a period that included Delta- and Omicron-variant waves. The excess number of breakthrough events over 16 weeks per 10,000 persons for Pfizer, compared with Moderna, was 45.4 for infection with SARS-CoV-2 – the virus that causes COVID-19 – 10.6 for COVID-19 hospitalization, 2.0 for COVID-19 intensive care unit admission and 0.2 for COVID-19 death.

A secondary analysis during a period of Omicron-variant predominance studying two groups of 7,894 mRNA vaccine recipients over a nine-week follow-up also found the estimated risk of SARS-CoV-2 infection to be slightly higher with a third dose of the Pfizer vaccine than with Moderna. The estimated risk difference, expressed as events over nine weeks per 10,000 persons, was 63.2.

“The infrastructure and methods used in our former studies of COVID-19 vaccines were the foundation for this analysis,” added Gerlovin. “This work would not have been possible without the VA-CAUSAL initiative and the

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scientific partnership between researchers at VA Boston and the CAUSALab at Harvard T.H. Chan School of Public Health.”

The study is available at <https://www.nature.com/articles/s41564-022-01272-z>



A nurse preparing to give an injection to a Veteran during a COVID-19 vaccine clinic at VA Boston Healthcare System’s Brockton campus, Dec. 18, 2021. (VA Boston HCS photo by Deirdre Salvas)